Search for Sterile Neutrinos Using the MiniBooNE Beam

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ABSTRACT

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The possibile existence of light sterile neutrinos in Nature is motivated, and the prospects to extend sterile neutrino searches beyond current limits is substantiated, using the MiniBooNE neutrino beam and detector at Fermilab. We report on the neutrino flux predictions for the MiniBooNE experiment, on the characterization of the charged-current, quasi-elastic interactions of muon neutrinos ($\nu_\mu n \rightarrow \mu^- p$) observed, and on the experiment's sensitivity to sterile neutrinos via muon neutrino disappearance.